

Appl. No. 10/517,877  
Amtd. Dated October 4, 2007  
Reply to Office Action of April 4, 2007

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AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) A GaN-based semiconductor device comprising:  
a GaN substrate having a low-density defect region and at least one core  
portion portions present in surrounded by said low-density defect region in a  
periodic planar arrangement in said substrate as that is a high-density defect  
region passing through substrate;  
a multilayer structure of GaN-based compound semiconductor layers  
formed on said GaN substrate; and  
an electrode portion having an electrode provided on said multilayer  
structure and a pad metal formed over on an insulating film deposited on said  
electrode and an insulating film, the pad metal being electrically connected  
through an opening of said insulating film to said electrode;  
said electrode portion being provided on said multilayer structure in a  
region such that it does not overlap in the depth direction any portion of except said core  
portion portions of said GaN substrate; and further wherein the pad metal  
extends beyond a lateral edge of the electrode and the pad metal does not overlap  
in the depth direction any portion of said core portion.

2. (Currently Amended) A GaN-based semiconductor device according to  
claim 1, wherein said periodic planar arrangement includes a plurality of core  
portions are arranged in at least one of a continuous belt-shaped arrangement,  
an intermittent belt-shaped arrangement, and a dotted dispersive arrangement.

3. (Currently Amended) A GaN-based semiconductor device according to

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claim 1, wherein said electrode portion is provided on said multilayer structure in said low-density defect region between said core portions adjacent to each other.

4. (Currently Amended) A GaN-based semiconductor device according to claim 1, wherein said pad metal is provided on said multilayer structure ~~in said region~~ at a position that is laterally spaced apart from ~~a~~ the center of each core portion by a distance of 100  $\mu$ m or more.

5. (Currently Amended) A GaN-based semiconductor device according to claim 1, wherein said electrode is provided on said multilayer structure ~~in said region~~ at a position that is laterally spaced apart from an the outer edge of each core portion by a distance of 50  $\mu$ m or more.

6. (Currently Amended) A GaN-based semiconductor device according to claim 1, wherein a counter electrode to said electrode is provided on ~~a~~ the back surface of said GaN substrate.

7. (Previously Presented) A GaN-based semiconductor device according to claim 1, wherein a counter electrode to said electrode is provided on said multilayer structure.

8. (Currently Amended) A GaN-based semiconductor device according to claim 7, wherein both said electrode and said counter electrode are provided on said multilayer structure such that they do not overlap in the depth direction any portion of said in said region except said core portions of said GaN substrate.

9. (Currently Amended) A GaN-based semiconductor device according to claim 8 ~~1~~, wherein said electrode is one of a p-side electrode and an n-side electrode, and said counter electrode is the other of said p-side electrode and said

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n-side electrode.

10. (Previously Presented) A GaN-based semiconductor device according to claim 1, wherein said GaN-based semiconductor device comprises a GaN-based semiconductor light emitting device including a GaN-based semiconductor laser device and a GaN-based light emitting diode.

Please add the following new claims:

11. (New) A GaN-based semiconductor device comprising:  
a GaN substrate having a low-density defect region and at least one core portion surrounded by said low-density defect region that is a high-density defect region;  
a multilayer structure of GaN-based compound semiconductor layers formed on said GaN substrate;  
an electrode portion provided on said multilayer structure and a pad metal formed over said electrode and an insulating film, the pad metal being electrically connected through an opening of said insulating film to said electrode; and further wherein the pad metal extends beyond a lateral edge of the electrode and the pad metal does not overlap in the depth direction any portion of said core portion.

12. (New) A GaN-based semiconductor device comprising:  
a GaN substrate having a low-density defect region and at least one core portion surrounded by said low-density defect region that is a high-density defect

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region;

a multilayer structure of GaN-based compound semiconductor layers formed on said GaN substrate;

a first electrode portion provided on said multilayer structure and a pad metal formed over said first electrode and an insulating film, the pad metal being electrically connected through an opening of said insulating film to said electrode; wherein the pad metal extends beyond a lateral edge of the electrode and the pad metal does not overlap in the depth direction any portion of said core portion; and

a second electrode formed over the GaN substrate adjacent to the multilayer structure and wherein the low-density defect region of the substrate extends continuously from a region beneath an outer portion of the pad metal to the region beneath the second electrode.